REMARKS

Claims 1-8 stand rejected under 35 USC 102(b) as being anticipated by U.S. Patent No. 2,056,813 to Vrooman et al. (hereinafter "Vrooman"). Claims 1 and 9-14 stand rejected under 35 USC 102(b) as being anticipated by German Patent No. DE 101 12 689 to Denndorfer (hereinafter "Denndorfer").

Applicant has cancelled claims 3-11 and amended claims 1-2 and 12-14 to further define the claims over the cited art. Applicant reserves the right to pursue any subject matter contained in cancelled claims 3-11 in one or more continuation applications.

Applicant submits that the cited art does not disclose or suggest the recited limitations of amended claims 1-2 and 12-14. More specifically, amended independent claim 1 requires an insulating structure which includes, inter alia:

> an elongate insulating shank extending in a longitudinal direction; and
> at least one insulating shed extending traverse to the longitudinal direction of the elongate shank;
> wherein at least a portion of said shank is defined by a first insulating surface, said first insulating surface having a patterned texture defined by an array of substructures selected from protuberances and concavities, and
> wherein at least a portion of said at least one shed is defined by a second insulating surface, said second insulating surface having a patterned texture defined by an array of substructures selected from protuberances and concavities.

Amended claim 1 requires an insulating structure which includes an elongate insulating shank and at least one insulating shed extending traverse to the longitudinal direction of the shank (e.g. see element 204, shown in FIG. 7 of Applicant's application). Amended claim 1 also requires that both a portion of the shank and a portion of the at least one shed be defined by first and second insulating surfaces respectively, each of the first and second insulating surfaces

having a patterned texture defined by an array of substructures selected from protuberances and concavities. Vrooman discloses an insulator having a cross-sectional area which varies along its length in order to reduce non-uniform dielectric heating in the body of the insulator in high voltage radio frequency applications. The insulator includes tapered longitudinal flutes (ribs 14) spaced apart from each other, but clearly does not disclose or suggest **at least one shed** as required by claim 1, let alone at least one shed **which extends traverse to the longitudinal direction of the shank and at least a portion of which is defined by an insulating surface which has a patterned texture defined by an array of substructures selected from protuberances and concavities** as required by claim 1.

Moreover, the function of Applicant's invention as recited by claim 1 is to reduce non-uniformity in the leakage current density and the voltage gradient that arises when a pollution layer is formed on the insulator. Generally, when a pollution layer is present on an insulator, leakage current and voltage gradients may cause dry bands around the shank of the insulator, resulting in insulator flashover (arcing), which can damage the insulator. This effect is particularly prevalent in low frequency (low power) systems, not in the high frequency supplies with which the insulator of Vrooman is used. Thus, Vrooman contains no teaching, suggestion, or motivation for applying sheds thereto.

Denndorfer does disclose an insulator having a number of sheds to help minimize surface current leakage. However, Denndorfer does not disclose both a portion of the shank and a portion of the at least one shed defined by first and second insulating surfaces respectively, each of the first and second insulating surfaces having a patterned texture defined by an array of

substructures selected from protuberances and concavities as required by claim 1. Instead, Denndorfer discloses varying the diameter of the sheds and/or adding concentric ribs to the underside of the sheds to increase the creepage length. The upper surface of the sheds of Denndorfer are ribbed, but are formed as curves extending from a central core to the rim of the sheds. Denndorfer does not disclose or suggest defining a portion of the shank with a first insulating surface which has a patterned texture defined by an array of substructures selected from protuberances and concavities as required by claim 1. The primary aim of the claimed structure of Applicant's invention as recited by claim 1 is to control the longitudinal distribution of leakage current density and voltage gradient in a way not disclosed or suggested in Denndorfer.

Finally, Applicant notes that there is no teaching, suggestion, or motivation to combine the elements of Vrooman with those of Denndorfer. Vrooman deals with non-uniform dielectric heating in the body of an insulator in high voltage radio frequency applications by varying and controlling the cross-sectional area of the structure to equalize the distribution of electrostatic flux density and eliminate undesirable heating effects. Denndorfer addresses controlling a leakage current density and a surface electric field for a pollution layer, an effect which is particularly prevalent at low frequency (low power) systems. Thus, combining the elements of the cited references would require a non-obvious inventive contribution.

For these reasons, Applicant submits that the cited art does not disclose or suggest the limitations of Applicant's invention as recited in amended claim 1.

Dependent claims 2 and 12-14 are patentable over Vrooman and Denndorfer for those reasons advanced above with respect to claim 1 from which they respectively depend, and for reciting additional features that are not taught or suggested by the cited prior art.

For example, dependent claim 13 requires that the array of substructures of the first insulating surface be arranged such that **the surface area of the first insulating surface is substantially constant per unit length along the longitudinal direction of the shank.** This structural limitation provides a substantially constant or controlled variation of leakage current density and surface electric field for a uniform conducting pollution layer along the insulating structure. Neither Vrooman nor Denndorfer discloses this structural limitation.

In light of all of the above, it is submitted that the claims are in order for allowance, and prompt allowance is earnestly requested. Should any issues remain outstanding, the Examiner is invited to call the undersigned attorney of record so that the case may proceed expeditiously to allowance.

Respectfully submitted,

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